

## CANCER INCIDENCE

### CANCER INCIDENCE BY PRIMARY SITE

This section contains a report on Montana's cancer incidence data for the diagnosis year 2003, reported as of December 2004 to the Montana Central Tumor Registry. Mortality data in this report are shown for the entire calendar year. Incidence cancer cases diagnosed in 2003 were approximately 90% completed on this date with 4,169 new cancer diagnoses having been reported for 2003. The expected number of Montana cancer cases for 2003 is 4,600. Estimates of Montana's expected cancer cases are based on the North American Association of Central Cancer Registries (NAACCR) method. The expected incidence rate for Montana was computed from Montana race-sex-site-specific age-adjusted death rates (2000 U.S.) and incidence-to-mortality (I/M) rate ratios computed from SEER race-sex-site-specific age-adjusted (2000 U.S.) incidence rates and U.S. race-sex-site-specific age-adjusted death rates (2000 U.S.).

**Table C-1** shows reported incidence of cancer for Montana residents diagnosed from 1994-2003 (10-year incidence). While previous reports showed cancer incidence data for one year, this report tabulates cancer incidence for 10 years and the data should not be compared with those in previous publications. The table shows cancer incidence by sex and by primary site--the original bodily location or organ system of the cancer. The most frequently diagnosed cancers were of the prostate (16.5% of all cancer diagnoses), female breast (16.2%), the lung and bronchus (13.4%), the colon (7.7%), melanoma (3.3%), the urinary bladder (4.5%), Hodgkin and Non-Hodgkin Lymphoma (4.1%), and the rectum and rectosigmoid (2.9%). Invasive cervical cancer accounted for less than 1% of cancer diagnoses (3.6% for both in-situ and malignant) for Montanans for 1994-2003. However, 1,276 of the 1,653 cervical cancers were in-situ--that is, non-invasive. Testicular cancer also accounted for less than 1% of cancer diagnoses—only 265 cases were reported in 1994-2003.

**Table C-2** shows the incidence of cancer for the ten most frequently diagnosed primary sites and by the sex and age of the patient at diagnosis. Men diagnosed with prostate cancer tended to be 50 or older. Diagnoses of breast cancer in women generally began in their late thirties and the age distribution was not as concentrated on a central age category as was that of prostate cancer for men. In 1994-2003, Montanans diagnosed with cancer of the lung and bronchus or the urinary bladder were most likely to be men aged 50 or older. Those diagnosed with cancer of the colon were about equally likely to be male or female and usually 50 years of age or older. The distribution of 1994-2003 cancer diagnoses by site, sex, and county of residence is shown in **Table C-3** for the 10 most frequently diagnosed primary sites.

**Figures 54, 56, 58, and 60** show the number of cancer diagnoses by year, sex of the patient, and stage of disease at diagnosis for prostate, breast, lung, and colorectal cancer, respectively. The stage of disease is recorded at the time of diagnosis and is not updated as the cancer progresses. Diagnosis at a localized stage means that the cancer has not spread beyond the organ or site of origin. Diagnosis at a regional stage means the cancer has spread to adjacent organs or regional lymph nodes. Diagnosis at a distant stage means the cancer has spread past adjacent organs or tissues to lymph nodes or organs elsewhere in the body.

**Figures 55, 57, 59, and 61** show the five-year relative survival rates for these same cancers, comparing Montana and the United States (SEER). The five-year survival rate is the percent of all patients who are living five years after diagnosis, whether the patient is in remission, disease-free, or under treatment. These rates have been adjusted to account for patients dying from causes other than cancer.

## PROSTATE CANCER

Prostate cancer was the most common cancer diagnosed in men in Montana and the United States, with 7,624 cases reported for 1994-2003 and 802 cases reported for 2003 in Montana. This incidence rate usually exceeds that of lung cancer. Nationally, it is primarily a disease of the elderly, as the median age at diagnosis is 70. In 2003, 109 Montana residents died of prostate cancer (**Tables D-1, D-2, D-5, and D-6**), making it the fourth leading cause of cancer deaths.

**Figure 54** shows the number of prostate cancer diagnoses reported by year and the stage at diagnosis for the years 1994 through 2003. The patient diagnosed with prostate cancer at early stages may be asymptomatic or just have symptoms of lower urinary tract obstruction. In 2003, 66% of prostate cancers were diagnosed at a local stage. Bone pain is the most frequent complaint from patients diagnosed with advanced disease. In Montana, the percentage of prostate cancers diagnosed at a distant stage decreased from 6% in 1994 to 3% in 2003. Cases reported as in-situ stage has increased to 7% in 2003 since Prostatic Intraepithelial Neoplasia (PIN) became categorized as an in-situ cancer and was reportable starting in 2001. The Prostate-Specific Antigen (PSA) test has been useful in detecting prostate cancer at earlier stages. About 90% of cancers of the prostate are characterized as adenocarcinomas.

**Figure 54**

### DIAGNOSIS OF PROSTATE CANCER MONTANA RESIDENTS, 1994-2003

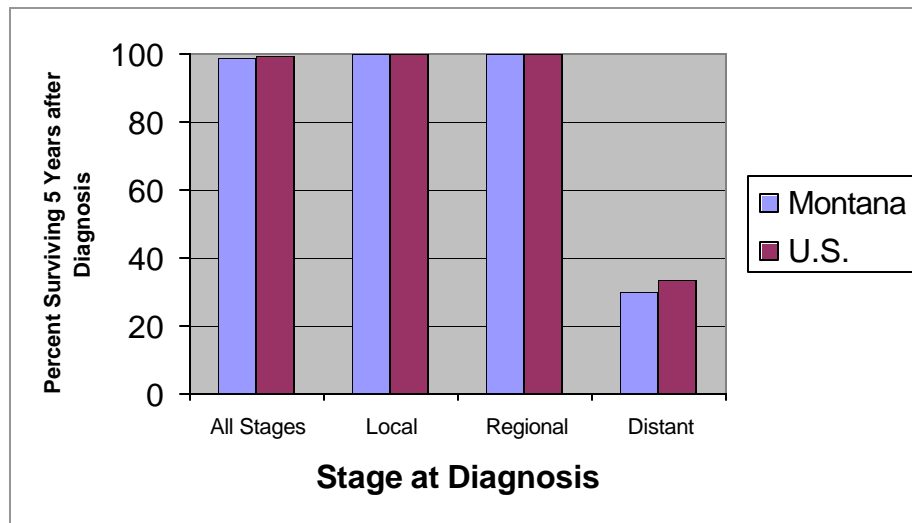
Year of Diagnosis	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Number of Cases Diagnosed	648	740	686	668	729	763	799	859	929	803
Percent Stage at Diagnosis*										
In-Situ	0%	0%	0%	1%	0%	0%	0%	5%	6%	7%
Local	64%	61%	57%	59%	64%	63%	68%	67%	68%	66%
Regional	15%	13%	16%	13%	14%	15%	12%	10%	11%	11%
Distant	6%	5%	5%	6%	5%	3%	4%	4%	2%	3%
Unknown	15%	21%	21%	22%	17%	18%	16%	15%	13%	13%

\* Percents may not add to 100% because of rounding.

**Figure 55** shows five-year survival rates for prostate cancer, comparing Montana's to the United States' rate. One hundred percent of Montanans diagnosed at a localized or regional stage were alive five years after diagnosis; however, only about 30% of those diagnosed at a distant stage were alive five years after diagnosis. Although survival rates are high for early diagnosis, it should be re-emphasized that prostate cancer was the fourth leading cause of cancer deaths among Montanans in 2003.

Figure 55

**FIVE-YEAR RELATIVE SURVIVAL BY STAGE AT DIAGNOSIS FOR PROSTATE CANCER  
MONTANA AND THE UNITED STATES, 1994-2003**



Prostate cancer is generally treated with surgery or radiation. About 45% of patient's diagnosed with prostate cancer have surgery (prostatectomy) within four months after diagnosis. Patients with early stage prostate cancer often opt for no treatment, but their physicians must watch these patients closely. About 30% of prostate cancer patients are treated with radiation. About 20% are treated with hormonal therapy shortly after diagnosis, but this course of treatment is usually reserved for patients with advanced disease.

**BREAST CANCER**

Breast cancer was the most frequently reported malignancy among Montana women with 7,500 cases reported for 1994-2003 and 660 cases reported for 2003. It was the underlying cause of death for 115 female Montanans and one male, making breast cancer the third leading cause of cancer deaths in 2003 (**Tables D-1, D-2, D-5, and D-6**). Breast cancer incidence increases dramatically with age, and the majority of cases occur after age 50. In Montana in 2003, 20% were diagnosed at an in-situ stage, 49% of breast cancers at a local stage, 22% at a regional stage, and 3% at a distant stage.

The distribution of stage at diagnosis is shown in **Figure 56**. The proportion of patients diagnosed at an in-situ stage has increased slightly over the past decade, while the proportion diagnosed at local and regional stages has decreased. Patients are being diagnosed at earlier stages and are detecting cancers earlier. Breast self-examination (BSE) may detect about 60% of breast cancers. Patients who perform routine BSE find smaller lesions and it is well established that women with early-stage breast cancer have better chances of survival. Screening mammography can detect a breast cancer in an earlier stage, which may account for an increase in the diagnosis of breast cancer nationally over the last decade.

**Figure 56**

**DIAGNOSIS OF BREAST CANCER  
MONTANA RESIDENTS, 1994-2003**

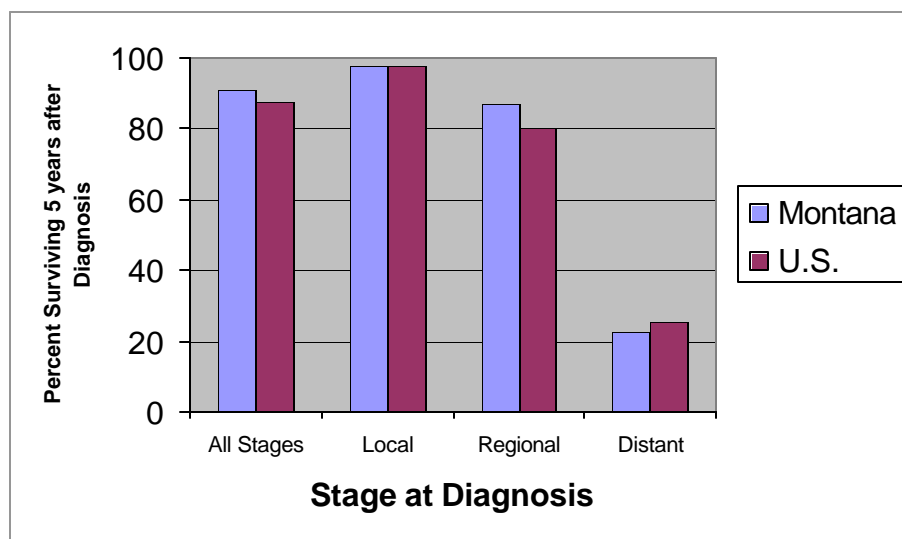
Year of Diagnosis		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Number of Cases Diagnosed	Males	4	1	1	6	5	5	2	7	2	4
	Females	634	692	761	737	774	827	820	842	757	656
Percent Stage at Diagnosis*											
In-Situ		10%	12%	11%	13%	14%	17%	18%	19%	20%	20%
Local		56%	55%	54%	50%	53%	52%	54%	50%	52%	49%
Regional		24%	21%	24%	28%	26%	22%	22%	24%	21%	22%
Distant		6%	4%	4%	3%	2%	3%	2%	3%	2%	3%
Unknown		5%	7%	7%	5%	4%	6%	4%	4%	5%	6%

\* Percents may not add to 100% because of rounding

**Figure 57** shows the five-year relative survival rate for women diagnosed with breast cancer, comparing Montana with the United States. For Montana women, 98% of women survived 5 years if diagnosed at a local stage and about 87% if diagnosed at a regional stage. If the cancer was diagnosed at a distant stage, the rate of survival was 22%. Breast cancer is treated in a variety of ways. Almost 95% of breast cancer patients are treated with surgery (lumpectomy or mastectomy) and about 40% are treated with radiation. About 40% are treated with both surgery and radiation. About 35% of patients are treated with chemotherapy, hormonal therapy or both. Almost 75% of breast cancers are duct cell carcinomas and over 10% are lobular carcinomas, which are a form of adenocarcinoma of the mammary gland.

**Figure 57**

**FIVE-YEAR RELATIVE SURVIVAL BY STAGE AT DIAGNOSIS FOR BREAST CANCER  
MONTANA AND THE UNITED STATES, 1994-2003**



## LUNG CANCER

In Montana, lung cancer was the second most common cancer diagnosis among men (after prostate cancer) and women (after breast cancer). In the years 1994-2003, 6,214 cancer cases have been reported and in 2003, 475 cases have been reported. It was the underlying cause of death for 534 Montanans (**Tables D-1, D-2, D-5, and D-6**), making it the leading cause of cancer deaths. The incidence of lung cancer increased in males by about 10% in the last 10 years; the percentage increase in women was about three times as large (30%).

The number of cases diagnosed and the stage at diagnosis for lung cancer diagnoses of Montanans are shown in **Figure 58**. In 2003, 49% of lung cancers were diagnosed at a distant stage and only 16% at a local stage. The stage was unknown or unstageable for about 10% of lung cases in 2003. Certain types of lung cancer spread very early and quickly, which causes the patient to be diagnosed at a regional or distant stage.

**Figure 58**

### DIAGNOSIS OF LUNG CANCER MONTANA RESIDENTS, 1994-2003

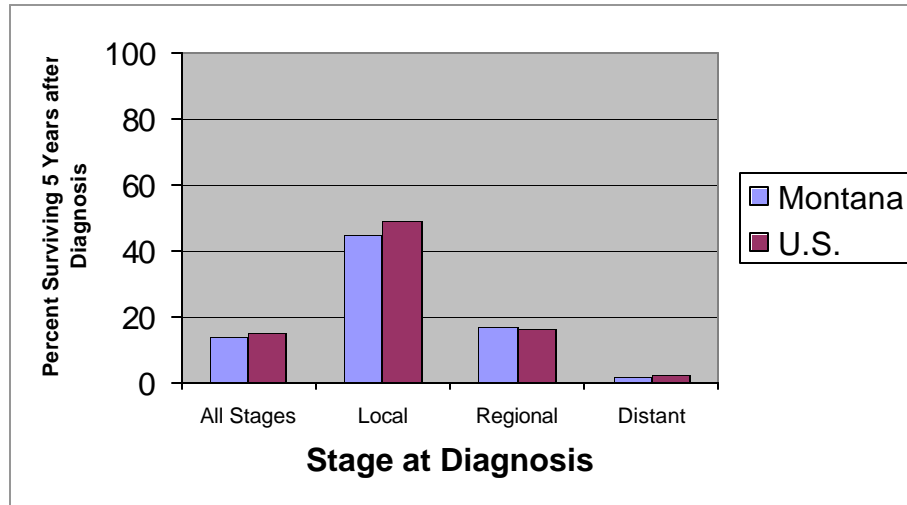
Year of Diagnosis		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Number of Cases Diagnosed	Males	318	365	378	338	410	338	382	357	345	265
	Females	227	257	254	279	318	261	304	326	282	210
Percent Stage at Diagnosis*											
In-Situ		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Local		22%	17%	19%	17%	17%	16%	22%	15%	14%	16%
Regional		24%	21%	21%	25%	27%	27%	26%	28%	26%	25%
Distant		37%	36%	38%	39%	39%	39%	37%	37%	44%	49%
Unknown		16%	25%	22%	19%	17%	17%	15%	19%	16%	10%

\* Percents may not add to 100% because of rounding.

Lung cancer has a much poorer prognosis than other cancers, partly because relatively few cases are diagnosed at an early stage. **Figure 59** shows the five-year relative survival rate for lung cancer, comparing Montana and the United States rates. Forty-five percent of patients diagnosed at a localized stage survive five years; however, only 17% survive five years if diagnosed at a regional stage and less than 2% if diagnosed at a distant stage. The types of treatment performed for lung cancer are determined by the type of cancer and the stage at diagnosis. Most lung cancers are treated with surgery, radiation, or chemotherapy. About 21% of patients with lung cancer are treated with surgery and about 35% are treated with radiation. Chemotherapy is given to about 36% of patients. A cough is the most common symptom of a lung cancer, but since coughing is a common symptom of many acute and chronic conditions, the diagnosis of lung cancer may be delayed. Twenty-four percent of lung cancers are squamous cell carcinomas, derived from stratified squamous epithelium. About 25% are adenocarcinomas and 20% are carcinoma, NOS.

**Figure 59**

**FIVE-YEAR RELATIVE SURVIVAL BY STAGE AT DIAGNOSIS FOR LUNG CANCER  
MONTANA AND THE UNITED STATES, 1994-2003**



**COLORECTAL CANCER**

Colorectal cancer was the third most common malignancy in Montanans with 4,915 cases reported for 1994-2003; there were 395 cases diagnosed and 164 deaths caused by colorectal cancer in 2003 (**Tables D-1, D-2, D-5, and D-6**) making it the second leading cause of cancer deaths. Because of the anatomic proximity and physiologic similarity of the colon and rectum, these two segments are often reported together as "colorectal" cancer. The incidence of colorectal cancer is extremely low in childhood and increases with age. **Figure 60** shows the frequency and stage at diagnosis for cancers of the colon and rectum. In 2003, 37% were diagnosed at a local stage, 35% at a regional stage, and 17% at a distant stage.

**Figure 60**

**DIAGNOSIS OF COLORECTAL CANCER  
MONTANA RESIDENTS, 1994-2003**

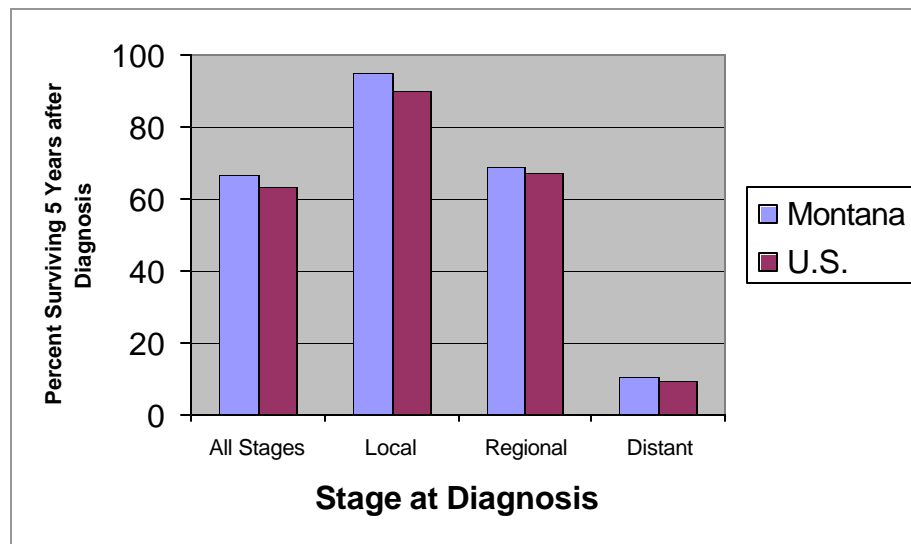
Year of Diagnosis		1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Number of Cases Diagnosed	Males	223	235	259	270	298	291	256	296	261	201
	Females	223	230	233	236	246	238	246	244	235	194
Percent Stage at Diagnosis*											
In-Situ		2%	2%	3%	4%	4%	2%	3%	5%	3%	5%
Local		39%	32%	34%	36%	33%	33%	34%	33%	35%	34%
Regional		35%	39%	38%	37%	40%	42%	42%	43%	37%	35%
Distant		15%	14%	13%	16%	16%	14%	14%	12%	16%	17%
Unknown		9%	12%	12%	8%	8%	9%	7%	7%	8%	6%

\* Percents may not add to 100% because of rounding.

**Figure 61** shows the five-year relative survival of patients diagnosed with colorectal cancer, comparing Montana and the United States. When colorectal cancer is detected at an early, or localized, stage the five-year relative survival is 95%. After the cancer has spread to a regional organ or lymph node, the survival rate drops to about 69%. Colorectal cancer is mostly treated with surgery or chemotherapy or both. About 85% of patients with colorectal cancer are treated with surgery and about 30% are treated with chemotherapy. About 11% are treated with radiation. About 70% of colorectal carcinomas are adenocarcinoma and 11% are mucinous adenocarcinoma (an adenocarcinoma which secretes mucin).

**Figure 61**

**FIVE-YEAR RELATIVE SURVIVAL BY STAGE AT DIAGNOSIS FOR COLORECTAL CANCER  
MONTANA AND THE UNITED STATES, 1994-2003**



**References:**

Ries LAG, Eisner MP, Kosary CL, Hankey BF, Miller BA, Clegg L, Mariotto A, Feuer EJ, Edwards BK (eds). *SEER Cancer Statistics Review, 1975-2001*, National Cancer Institute. Bethesda, MD, [http://seer.cancer.gov/csr/1975\\_2001/](http://seer.cancer.gov/csr/1975_2001/), 2004.

North American Association of Central Cancer Registries, Cancer in North America: 1996-2000, Volume One: Incidence, 2003.

Robert B. Cameron, MD, Practical Oncology a Lange Clinical Manual, 1994.

Clinical Oncology, Second Edition, American Cancer Society, 1995.